



Bellcomm

955 L'Enfant Plaza North, S.W.
Washington, D. C. 20024

date: July 6, 1971

to: Distribution

from: L. A. Ferrara

B71 07003

subject: Trip to KSC to Monitor Voice Communications
during the Apollo 15 Flight Readiness Test
Case 320

ABSTRACT

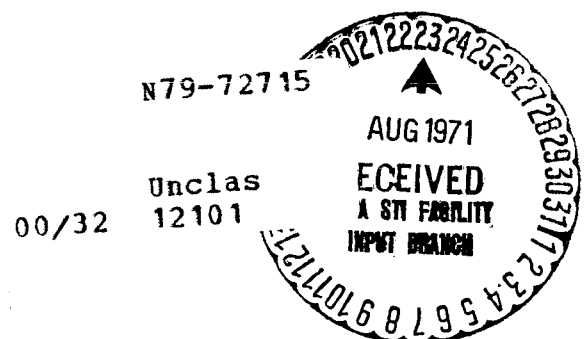
The voice communications at KSC were monitored during the Apollo 15 Flight Readiness Tests on June 15 and 22, 1971. The performance of the Operational Intercomm System (OIS-RF) was satisfactory with only an occasional problem which was quickly remedied. There were some extremely noisy VHF downlink voice communications from the Spacecraft during the June 15 Test which was reportedly caused by a faulty antenna feed at the ground station. The circuit was made good in time for the rerun of the FRT on June 22 and the downlink VHF voice communications were observed to be of very good quality.

(NASA-CR-121358) TRIP TO KSC TO MONITOR
VOICE COMMUNICATIONS DURING THE APOLLO 15
FLIGHT READINESS TEST (Bellcomm, Inc.) 6 P

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MEMORANDUM FOR FILE

1.0 Introduction

Performance of the KSC Operational Intercomm System (OIS-RF) was monitored during selected portions of the Apollo 15 Flight Readiness Test (FRT) on June 15, and June 22, 1971. The author monitored voice communications on both occasions from the Communications Control Console in the backup Firing Room of LC 39 while Mr. J. T. Raleigh monitored the spacecraft ground station interface signals on June 15 from the North American Communications Laboratory (MOLC) at the Manned Spacecraft Operations Building. The OIS-RF satisfactorily supported the test. Specific observations are listed in Section 2.0.

2.0 Observations

June 15

1036 EST Static and noise reported on channel 136 was
T-2:24 traced to an unoccupied OIS-RF dual end
instrument in the LH₂ area that was left with
the channel selectors set at 181/136, all
volume controls wide open, and no terminating
headset connected.

1100 T-2:00 holding for Spacecraft G & N problem
possibly related to yesterdays (June 14)
lightning strike.



- 1132 GSE countdown clock problem reported on ch 121. All personnel requested to check what they were doing at 14:21:2.965 (GMT) at the moment that the clock reversed and started counting up.
- 1405 Spacecraft crew reported they had to reset master volume thumbwheel to 3 to reduce very high level speech peaks from being received in the cockpit.
- 1408 Loud burst of static on channel 214 when CDR come on circuit with a lightweight headset. MSTC suggested static due to bad headset.
- 1410 Noise source traced to 259.7 MHz VHF downlink from spacecraft.
- 1412 MOLC reported downlink carrier from spacecraft was noise free as viewed on their spectrum analyser.
- 1413 Communications control (JROC) at CD & SC also reported noise free downlink VHF signal coming from receivers located at the CIF Antenna Building.
- 1415 Resumed countdown at T-2 hours.
- 1423 Severe noise problem on channel 214 due to VHF downlink circuit. VHF receiver feed was released and S-Band downlink placed on 214 which temporarily solved noise problem but put the Astrocommunications Panel out of configuration.
- 1425 GMIL declared source of noise coming from spacecraft although a local welding operation at the MSFN station may be source of problem.
- 1427 MOLC reported VHF and S-Band downlink voice from spacecraft sounds very good.
- 1430 GMIL informed MCSE on channel 213 that a fully squelched VHF receiver was now on the line with the same settings that are used for liftoff in order to avoid adjacent RF Channel interference from LV stage telemetry transmitters. GMIL tried 4 different receivers, squelched and unsquelched but could not pinpoint the noise source. GMIL recommended return to normal Stoney panel



configuration (simo Uplink and Downlink VHF and S-Band). If noise reappears, GMIL will drop offending receiver off line.

- 1438 LMP reported on net using Snoopy headset, some low level background noise was observed on the channel (214) but it sounded like "normal" VHF.
- 1507 Bad weather approaching reported on channel 111. Clouds, rain, thunder and lightning.
- 1510 GMIL recommends always coming on line with the VHF air/ground voice receivers squelched.

It is believed this procedure is undesirable except as an emergency measure. Should the spacecraft VHF signal become weak for any number of reasons, the signal may not get through. Depending on the Stoney panel configuration and other contingencies (such as loss of S-Band lock), there may be no other voice communications path from the spacecraft.

- 1556 T-22^m and holding to determine the capability of the spacecraft and GSE to support the plus count.
- 1638 ACE room reports an erroneous signal from the launch vehicle. Trouble analysis will require power down and removal of an umbilical connector. This will extend the hold to at least 1800.
- 1856 Resumed count @ T-22 minutes.
- 1903 Terminal count communications reported loud and clear.
- 1918 Simulated lift-off.
(T-0)
- 1959 Caution and Warning light in spacecraft; lightning
(T+41) has apparently struck LUT. Small fire reported in base LUT in the same GSE multiplexer equipment that was damaged by lightning on previous day. The spacecraft was powered down and test terminated.

The Flight Readiness Test was subsequently rescheduled for June 22 to pick up the latter part of the minus



countdown and perform the plus count mission simulation which was prematurely terminated on June 15. It is understood that investigation by personnel at the MILA MSFN ground station (GMIL) during the intervening week revealed a corroded RF connector in the VHF antenna system which is now believed to have been the primary source of the noise reported on the VHF downlink voice channel.

June 22

0730 Only light traffic observed on OIS channels. No
T-2:30 background noise was evident.

0837 High pitch, low level audio tone occasionally
 heard in background on channel 214 when SCDR is
 talking via VHF from spacecraft. The same noise
 was not present on channel 212 which was connected
 to output of S-Band receiver.

0839 SCDR reported loud noise in his headset; he was
 configured for Push-to-Talk on his audio panel.
 MSTC advised him to go to Intercomm/PTT and the
 noise disappeared.

0819 All launch vehicle stages on internal power. No
 anomalies reported.

0936 Astrolaunch communication checks reported loud
(T-15^m) and clear both directions. VHF downlink loop
 was very good quality. HFLT was observed at
 low levels (\approx 10dB below other talkers on net).
 When prompted by MSTC however, HFLT voice level
 improved.

0956 Final astrolaunch communication checks with crew
(T-4) reported loud and clear. Responses by crewmen
 as observed on channel 212 were clear but of
 lower level than previous (T-15) callouts.

0958 Glycol radiator valve did not indicate on GSE
 that it went into internal mode when put in
 BYPASS.

1000 Simulated lift-off.

1007 GMIL removed constant key VHF. No communications
 anomalies reported.



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